

CLAIM AMENDMENTS

1. (Currently Amended) An isolated nucleotide sequence comprising a coding sequence for a full-length mutant microbial purine nucleoside phosphorylase ~~cleaving-enzyme~~ having an amino acid substitution mutation, the mutant purine nucleoside phosphorylase having different biological activity than a wild type microbial purine nucleoside phosphorylase ~~cleaving-enzyme~~.

2. (Original) The nucleotide sequence of claim 1 wherein the different biological activity is greater biological activity.

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Original) The nucleotide sequence of claim 4 wherein the mutant purine cleaving enzyme is an *E. coli* purine nucleoside phosphorylase.

7. (Original) The nucleotide sequence of claim 1 wherein the coding sequence encodes an enzyme having different biological activity cleaving a nucleoside analog than a wild-type enzyme.

8. (Canceled)

9. (Currently Amended) The nucleotide sequence of claim 1 wherein said coding sequence is for a mutant *E. coli* purine nucleoside phosphorylase containing a complete open reading frame and encodes an amino acid sequence comprising residues 1-239 of SEQ ID NO: 2.

10. (Original) The nucleotide sequence of claim 1 wherein said nucleotide sequence comprises residues 1-720 of SEQ ID NO: 1.

11. (Currently Amended) The nucleotide sequence of claim 1 wherein said coding sequence is for a mutant *E. coli* purine nucleoside phosphorylase containing a complete open reading frame and encodes an amino acid sequence comprising residues 1-239 of SEQ ID NO: 4.

12. (Original) The nucleotide sequence of claim 1 wherein said nucleotide sequence comprises residues 1-720 of SEQ ID NO: 3.

13. (Currently Amended) The nucleotide sequence of claim 1 wherein said coding sequence is for a mutant full-length *E. coli* purine nucleoside phosphorylase containing a complete open reading frame and wherein said coding sequence encodes an amino acid sequence having an amino acid substitution mutation of mutant selected from the group consisting of: M65A, M65I, M65Q, H5N, A157F, A157L, E180D, E180N, E180S, E180T, M181A, M181L, M181N, M181V, M181E, E182A, E182Q, E182V, D205A and D205N.

14. (Original) A vector comprising the nucleotide sequence of claim 1.

15. (Currently Amended) The vector of claim 14 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein, said nucleotide sequence comprising residues 1-720 of SEQ ID NO: 1.

16. (Currently Amended) The vector of claim 14 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein comprising residues 1-239 of SEQ ID NO: 2.

17. (Currently Amended) The vector of claim 14 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein, said nucleotide sequence comprising residues 1-720 of SEQ ID NO: 3.

18. (Currently Amended) The vector of claim 14 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein comprising residues 1-239 of SEQ ID NO: 4.

19. (Original) The vector of claim 14 wherein said vector further comprises at least a portion of one component to aid delivery to target cells selected from the group consisting of: a virus, bacteria, mammalian cell, non-mammalian cell, DNA molecule, and modified DNA molecule.

20. (Original) The vector of claim 14 selected from the group consisting of: a retroviral vector, an adenoviral vector, an adeno-associated viral vector, a herpes vector, a viral vector and a plasmid.

21. (Original) The vector of claim 14 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein selected from the group consisting of: M65A, M65I, M65Q, H5N, A157F, A157L, E180D, E180N, E180S, E180T, M181A, M181L, M181N, M181V, M181E, E182A, E182Q, E182V, D205A and D205N.

22. (Currently Amended) A host cell transformed with a vector comprising an isolated nucleotide sequence encoding a full-length mutant microbial purine nucleoside phosphorylase ~~cleaving-enzyme~~ having an amino acid substitution mutation, the mutant purine nucleoside phosphorylase having different biological activity than a wild type microbial purine nucleoside phosphorylase ~~cleaving-enzyme~~.

23. (Currently Amended) The host cell of claim 22 wherein the vector comprises the nucleotide sequence comprising residues 1-720 of SEQ ID NO: 1.

24. (Currently Amended) The host cell of claim 22 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein comprising residues 1-239 of SEQ ID NO: 2.

25. (Currently Amended) The host cell of claim 22 wherein the vector comprises the nucleotide sequence comprising residues 1-720 of SEQ ID NO: 3.

26. (Currently Amended) The host cell of claim 22 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein comprising residues 1-239 of SEQ ID NO: 4.

27. (Original) A recombinant virus which is capable of transferring a gene to a target cell and which comprises the nucleotide sequence of claim 1.

28. (Currently Amended) The virus of claim 27 wherein the nucleotide sequence is comprising residues 1-720 of SEQ ID NO: 1.

29. (Currently Amended) The virus of claim 27 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein comprising residues 1-239 of SEQ ID NO: 2.

30. (Currently Amended) The virus of claim 27 wherein the nucleotide sequence is comprising residues 1-720 of SEQ ID NO: 3.

31. (Currently Amended) The virus of claim 27 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein comprising residues 1-239 of SEQ ID NO: 4.

32. (Original) The virus of claim 27 wherein the nucleotide sequence encodes a mutant *E. coli* purine nucleoside phosphorylase protein selected from the group consisting of: M65A, M65I, M65Q, H5N, A157F, A157L, E180D, E180N, E180S, E180T, M181A, M181L, M181N, M181V, M181E, E182A, E182Q, E182V, D205A and D205N.

33. (Original) A host cell transformed with the virus of claim 27.
34. (Canceled)
35. (Canceled)
36. (Canceled)
37. (Canceled)
38. (Canceled)
39. (Canceled)
40. (Canceled)
41. (Canceled)
42. (Canceled)
43. (Canceled)
44. (Canceled)
45. (Canceled)
46. (Canceled)
47. (Canceled)

48. (Canceled)

49. (Canceled)

50. (Canceled)

51. (Canceled)

52. (Canceled)

53. (Canceled)

54. (Currently Amended) A commercial kit for impairing a cell comprising:
a vector containing an isolated nucleotide sequence encoding an amino acid sequence
comprising residues 1-239 of SEQ ID NO: 2; and
instructions for use.

55. (Canceled)

56. (Currently Amended) A commercial kit for impairing a cell comprising:
a recombinant virus containing an isolated nucleotide sequence encoding a mutant *E. coli*
purine nucleoside phosphorylase protein comprising residues 1-239 of SEQ ID NO: 2; and
instructions for use.